Safety & Health for the Commonwealth

MASSACHUSETTS DIVISION OF OCCUPATIONAL SAFETY
ASBESTOS & LEAD PROGRAM

Summer 2005 Issue VII

The Regulation of Asbestos Joint Compound/Drywall Work

Recently, the Division of Occupational Safety (DOS) has received a large number of inquiries concerning requirements for work involving asbestos-containing joint compound/drywall systems. In older installations, the joint compound used in taping and finishing such drywall systems commonly contained asbestos (usually chrysotile) in concentrations of greater than 1%. In its intact state on the wall surface, this joint compound is usually non-friable; and it therefore presents little risk of fiber release and asbestos exposure. During demolition or repair, the mechanical forces involved may cause the joint compound to become friable, however, and in addition to increasing the risk of fiber release and exposure, such action triggers the regulatory requirements of several state and federal agencies, including OSHA, EPA, MA Department of Environmental Protection (DEP) and DOS. To the layperson and even to many experts in the asbestos field, navigating the course of the various and sometimes conflicting requirements of these agencies as they pertain to drywall/joint compound systems can be a daunting task. The purpose of this article will therefore be to provide some background and perspective on the regulatory issues, if not to resolve the conflicts themselves.

OSHA regulates construction-related work involving asbestos joint compound/drywall systems through its Construction Standard for Asbestos, 29 CFR Part 1926.1101. Interpretive guidance regarding the application of the Standard to asbestos joint compound/drywall work may be found in OSHA Instruction CPL 2-2.63, issued November 3, 1995, and in several official letters of interpretation, which may be found on the OSHA website at www.osha.gov. Although OSHA's decision to classify joint compound as a "finishing material" rather than as a "surfacing material" in its asbestos standard might appear to be only a nominal distinction, it in fact, forms the basis for OSHA's whole regulatory framework for joint compound/drywall work.

Under the Asbestos Construction Standard, all work involving the removal of asbestos surfacing materials must be carried out as Class I work. This is the type of work for which the stringent work practice, training, medical monitoring and worker protection controls usually associated with full-scale abatement of friable asbestos materials are generally required by the Standard. If asbestos joint compound had been classified by OSHA as a surfacing material—as is the case for acoustical and decorative plasters—its removal would therefore have to be carried out as full-scale abatement work, in the same manner as would be required for asbestos pipe and boiler coverings, sprayed-on asbestos and

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Please note that, while this article includes a discussion of federal and other state regulatory requirements, specific compliance information should be obtained from the relevant enforcement agency.

Visit us on the Web:
www.mass.gov/dos

Electric Arc Burns-Request for Information

Many people realize that construction sites, including lead and asbestos abatement sites, often present serious electrical hazards. Frequently, the combination of high capacity electric distribution lines and equipment, which are often found at these sites, and the use or proximity of water presents a deadly combination which significantly increases the risks of electrical shock and death. Data compiled by the National Institute of Occupational Safety and Health (NIOSH), Pittsburgh Research Laboratory confirm this risk. Although it comprises only 7% of the workforce in the United States, the construction industry accounts for 44% of all electrical fatalities, and electrical shock causes 99% of these fatalities. But the risk presented by another major electrical hazard, electric arc burns, may often be overlooked. These burns, which result from the radiant and convective heat produced from a short circuit, often do not involve actual contact with an energized circuit or electric shock. But as may especially be the case where high voltages and currents are involved, the flash produced by a short circuit often releases tremendous amounts of heat which may cause serious burn injuries to persons in the area. Data compiled by NIOSH for the mining industry demonstrate that while electric arc burns account for a fairly low percentage of electrically-related fatalities, they account for the highest percentage of lost work days (35%) occasioned by electrically-related injuries.

The NIOSH research also sheds light on some other important facts concerning electric arc burn injuries. Whereas newly-hired employees and others with only a limited amount of time on the job are at a heightened risk for involvement in most construction-related accidents, supervisors and other persons with more than 10 years employment experience account for a disproportionate share of electric arc burn injuries. Further, lack of knowledge of electrical hazards likely to result in electric arc injuries is apparently not a factor in many occurrences.

In an effort to further investigate the causes of non-contact electric burn injuries and reduce future occurrences, the Bruceton Research Laboratory of NIOSH is interested in interviewing anyone who has either witnessed such an injury or experienced one first-hand. Persons having knowledge of occurrences of occupational electric burn injuries are encouraged to contact:

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Analytical Services Compliance

DOS inspects laboratories to ensure that regulatory requirements are being met throughout the licensure period, and that current standards of good industrial hygiene are implemented. The majority of the laboratories audited by DOS are Class C laboratories, which can perform clearance air testing in any facility, including schools. To achieve certification from DOS as an Asbestos Analytical Service, an applicant must meet certain regulatory requirements, including maintaining proficiency in the AIHA or NVLAP quality control program. Although many of the Class C laboratories are small (1 or 2 persons), there is a minimum standard of quality which must be maintained.

The most frequently occurring areas in need of corrective action that DOS has discovered during routine laboratory audits have been related to their quality control.

- Either there is no quality control person (QA/QC coordinator), or the lab director fulfills the QC role. There needs to be a distinction, since the QA/QC person cannot contribute to the proficiency results of the lab. Oftentimes, in smaller labs, there is only one person counting, so the QC person is usually a person independent of the lab, but familiar with the QC requirements.
- A reference slide is not counted prior to each day's samples. This is a simple matter to correct by adding a place on the field log sheet for a reference slide.
- Labs using the NIOSH 7400 method do not have slides of the requisite fiber loading levels, which leads to the lab not having a database of 10% recounts.
- There is little document review in many instances. When a report is prepared for a client, usually the analyst types the report with no second person, such as the QA/QC coordinator, to review it for accuracy, typographic errors (such as decimal point location), especially when transcribing from a field log sheet.

The QA/QC manuals are not updated regularly to reflect the actual practices that the labs are implementing. Frequently, labs have developed more effective and efficient methods, but have not updated their written program to indicate the current methods. This causes the lab to be in non-compliance with their documented program.

Lab personnel report that the major factor which affects the ability to implement an effective quality control program is the element of time. Labs with limited personnel are usually traveling to various locations to conduct clearance inspections throughout the state, and preparing the paperwork related to that work. The quality control is typically something that is not a priority, and is usually attended to only if time permits. For additional information on the lab audit process, contact DOS at 413-781-2676.

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other friable asbestos materials. Instead, as a result of its determination that "the fibers in joint compound are too tightly bound for the compound to belong in the 'high risk' category" (See OSHA Standard Interpretations 05/14/1998 - Asbestos Standard: Joint compound is not a surfacing material.) OSHA avoids the "surfacing material" classification and allows removal of joint compound to be carried out under the somewhat attenuated Class II standards that are generally specified for the removal of nonfriable asbestos materials. OSHA's classification of joint compound as a finishing material also relieves building owners of having to assume that joint compound applied before 1980 is asbestos-containing in the absence of testing, as is required for thermal system insulation and surfacing materials. If joint material had been classified as a surfacing material, and as a "presumed asbestos-containing material" (PACM) by extension, building owners would have had to determine the presence, quantity and location of the material, notify contractors and others regarding its presence, and post signs and labels warning of the presence of the material, in accordance with the hazard communication provisions of Standard. Even if joint compound/wallboard systems are not designated as PACM under the OSHA standard, an owner who has knowledge that the materials do, in fact, contain asbestos must treat them as such in order to be in compliance with the OSHA standard, however. It is also noteworthy that the OSHA Construction Standard for Asbestos allows repair and maintenance work involving asbestos joint compound to be carried out as Class III work. In general, the work practice and training requirements for Class III work under the Standard are further attenuated and more performance-based, compared to Class I requirements, especially where materials other than thermal system insulation and surfacing materials are involved. For example, workers and supervisors are required to have 16 hours of training, as opposed to 32 hours and 40 hours, respectively. In accordance with OSHA Instruction CPL 2-2.63, repair and maintenance operations involving disturbance of asbestos joint material/drywall systems would be Class III operations only if they involved less than one glovebag of material; otherwise they would be classified as Class II work under the OSHA Construction Standard for Asbestos. Also to be considered is the matter of analyzing asbestos joint compound/drywall systems to determine whether or not they exceed the 1% threshold which distinguishes an asbestos-containing material from a non-asbestos-containing material. OSHA has always required that the joint compound layer and any other distinct layers in the system be analyzed separately and that the material be classified as asbestos-containing if the asbestos content in any single layer exceeds 1%. In those situations where no asbestos is detected in any layer, subsequent work would be exempt from most requirements of the standard. In those situations where asbestos is detected in any individual layer at levels of less than 1%, some limited requirements, including training, use of wet methods and personal air monitoring would still apply, however.

www.epa.gov - this site is maintained by the US Environmental Protection Agency. It contains many links to information on IAQ issues, asbestos, lead, toxins etc.

www.osha.gov - this site is the web address of the Occupational Safety and Health Administration. It contains guidance on OSHA compliance including compliance directives and interpretations on worker health and safety

www.niosh.gov - Maintained by the National Institute of Occupational Safety and Health. NIOSH is the research branch of OSHA. Respirator information....

www.cdc.gov The Centers for Disease Control site

www.mass.gov/dep - the Mass Department of Environmental Protection site contains information such as recent penalty activities for violators

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EPA regulates asbestos containing joint compound/drywall systems primarily through the Asbestos Hazard Emergency Response Act (AHERA), which applies to K - 12 not-for-profit schools, and through the National Emission Standard for Hazardous Air Pollutants (NESHAP), which applies to, among other things, facilities undergoing renovation or demolition. Under AHERA, schools must inspect and sample suspect asbestos-containing joint compound/drywall systems for the presence of asbestos and, in the case of a positive result, include them in the school's management plan, maintain them in an intact condition and carry out renovation or demolition operations that disturb more than 3 linear/square feet of material (or the amount that can be contained by a single 5-foot glove bag) as abatement operations, i.e., as "Response Actions". With regard to analysis under AHERA, EPA technically allows all layers of a full-depth joint compound/drywall sample to be mixed and analyzed together ("composited") and the asbestos content expressed as a percent of the total volume of sample. But in recognizing that individual layers of a joint compound/drywall system may contain greater than one percent asbestos when a composite analysis of the same material indicates an asbestos content of less than one percent, EPA strongly discouraged composite analysis in favor of a layer-by-layer analysis in a September 30, 1994 asbestos sampling bulletin. Under the EPA NESHAP Standard, composite analysis is also technically allowed for drywall/joint compound combinations where the joint compound is used only for covering nail holes, joints, corners, areas of minor damage and other surface irregularities. But as is the case for AHERA, a layer-by-layer analysis similar to that required by OSHA is recommended in all cases and specifically required for joint compound/drywall systems where the compound is applied as a separate layer over the entire surface of the drywall, i.e., as a skim coat or "add-on layer". Further, under NESHAPS, the asbestos content of a friable material which has been determined to be greater than zero (percent) but less than 10 percent by a polarized light microscopy (PLM) method that does not include point counting must be confirmed through point counting. Although the 1982 "Interim Method" is still an officially-recognized method for the analysis of asbestos bulk samples under NESHAP, EPA recommends the use of the more sophisticated EPA/600-93/116, "Method for the Determination of Asbestos In Bulk Building Materials" for the analysis of joint compound/drywall samples. This later method includes provisions for multi-layer analysis, allows for the use of transmission electron microscopy (TEM) to detect asbestos fibers that are too small to be visible under PLM and includes procedures for matrix reduction and gravimetric analysis, which yields a more accurate determination of the asbestos content of the sample. The enhanced accuracy of gravimetric analysis might be desirable in circumstances where samples test close to one percent using point counting and a substantial investment is riding on the difference. In any case, joint compound/drywall materials that test greater than one percent and are substantially intact, i.e., undeteriorated, would normally be classified as "Category II Non-Friable ACM" under NESHAP. If such materials were to have a high probability of becoming friable during the course of renovation and demolition operations, they would be also classified as "Regulated Asbestos-Containing Material" (RACM) and regulated as such under NESHAP. This would mean that joint compound/drywall materials would need to be removed from a regulated structure undergoing renovation or demolition prior to commencement of the work. Other NESHAP-related requirements would also be triggered for renovation and demolition operations involving more than the *de minimus* quantity of material. These would include: job notification requirements; adequate wetting of the material prior to handling, certain other work practice requirements and proper disposal.

A discussion of how the NESHAP requirements relate to work involving asbestos joint compound/drywall systems in Massachusetts is largely academic, however, as the EPA usually waives enforcement of NESHAP to the Massachusetts

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DEP, which administers requirements pursuant to 310 CMR 7.00 that cover the same work and are substantially more stringent. Under both the NESHAP and Massachusetts requirements, for example, asbestos containing joint compound/drywall material that would be made friable by a planned renovation or demolition operation would need to be removed (abated) prior to commencement of the work. But whereas NESHAP exempts residential buildings of four or fewer units from coverage by this requirement, 310 CMR 7.00 does not. Further, with regard to analysis, DEP, by policy, prohibits composite sampling in any case, requires the use of the more sophisticated EPA/600-93/116 method of analysis and generally requires point counting to confirm negative sample results. In contrast, NESHAP, as has been pointed out, allows composite sampling in certain circumstances, allows (but discourages) use of the "Interim Method" for analysis and does not require that samples that initially test negative via either the "Interim Method" or EPA/600-93/116 be confirmed as negative through point counting. Also, compared to NESHAP standards, DEP regulations specify more extensive work practice requirements for asbestos work involving abatement of asbestos joint compound/drywall material. In addition to the adequate wetting and proper containerization and disposal required by NESHAP, DEP standards at 310 CMR 7.00 specify containment and sealing of the work area (generally with plastic sheeting) and the same HEPA-filtered work area ventilation that would be used for any full-scale asbestos abatement project. But perhaps most significantly, the DEP standards do not specify any *de minimus* or threshold quantities for joint compound/drywall material below which renovation or demolition operations involving the material would not be subject to the full range of work practice requirements specified by the standard. In the strictest sense, this means that even the smallest amount of asbestos joint compound/ wallboard material would need to be removed from a building prior to demolition and abatement operations involving the smallest amount of material would need to be carried out as full-scale asbestos projects, utilizing full containment, negative air ventilation, etc. In practice, owners and contractors involved with small-scale joint compound/drywall projects have often been able to negotiate allowances for the use of attenuated work practices with local DEP inspectors.

The requirement that asbestos joint compound/drywall be removed from a building prior to its demolition is outside of DOS' purview. Therefore DOS, unlike EPA and DEP, does not have any requirements in this regard. Concerning analysis, DOS recognizes both the 1982 "Interim Method" and the EPA/600-93/116 method. It does not have any written policies regarding composite sampling or multi-layer analysis of joint compound/drywall material. As is the case under NESHAP, intact asbestos joint compound is regarded as a "Category II Non-Friable Asbestos Containing Building Material" under the DOS asbestos regulation, 453 CMR 6.00. Under 453 CMR 6.00, the work practices and other requirements that apply to renovation, demolition or repair work that disturbs asbestos joint material depend on: (1) the amount of material involved; and (2) the type of disturbance, i.e., whether the nature of the disturbance is likely to cause the material to become friable. In general, work that involves the shearing, breaking or slicing (cutting with a knife blade) is not regulated under 453 CMR 6.00, provided that the work does not result in the production of asbestos dust or the material becoming friable. Work that involves sanding, grinding, sawing, chipping or abrading of the material, or some other operation that results in the material becoming friable, is regulated by 453 CMR 6.00.

If the quantity of joint compound/ drywall material subjected to these types of mechanical activities during a renovation or repair activity amounts to more than three linear/square feet, the project would need to be carried out as an asbestos

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abatement operation ("asbestos response action") by an asbestos contractor utilizing certified workers and supervisors. The full complement of work practices required for full-scale asbestos abatement by 453 CMR 6.14, including notification, work area isolation, full containment with plastic sheeting, use of HEPA-filtered negative air ventilation, clean-up to the level of "no visible debris" and both visual and air clearance testing by a certified project monitor would be required for this type of work. If, however, the quantity of joint compound/drywall material involved amounted to less than three linear/square feet, the project could be carried out as a "small-scale asbestos project" in accordance with the requirements of 453 CMR 6.13. This kind of work could be carried out by persons who have received the 2-day "associated project worker" training. The work practices for these types of smaller-scale projects would also be somewhat attenuated and more performance-based, compared to those required for response actions, and only visual inspection to the level of "no visible debris", not air testing, would be required for job clearance.

In response to recent inquiries, DEP and DOS have been investigating whether specialized protocols for asbestos joint compound/drywall work could be developed that would ensure the safety of the work and meet the regulatory requirements of both agencies. To date, several proposed protocols and a limited amount of supporting air monitoring data have been submitted for review. DOS and DEP are interested in reviewing such proposed protocols and any supporting air monitoring results obtained through TEM analysis, in particular. Interested parties are invited to contact Ernie Kelley at DOS (413) 448-8746 or Glenn Keith at DEP (617) 292-5874 for more information.

Q & A: AHERA vs. NESHAP Bulk Analysis

Question from School Superintendent:
We are in the planning stages of renovations to our school, which was constructed in the 1960's. One phase of the work will involve demolition of the old plaster walls and ceilings in the gymnasium and cafeteria areas. We have always taken AHERA compliance seriously, and these ceilings and walls were tested on six separate occasions during the initial and 3-year AHERA inspections. All testing has consistently shown that the plaster ceilings and walls contain a very low asbestos content—less than 1%. We had the VAT abated in the school some years ago, and there are no other ACBMs present in the school. Someone told me that NESHAP requirements could still apply to the demolition/renovation work that we are planning. How could they, if all of the testing that we have done shows that there are no ACBMs in the school?

Answer:
The AHERA standard requires that full-depth samples of plaster coatings be taken but does not require that each distinct layer of a multi-layered coating be analyzed separately. Instead, it allows the individual layers to be mixed together ("composited") and the asbestos content expressed as a percent of the total volume of each sample. NESHAP, on the other hand, requires that each individual layer of a plaster sample be analyzed separately. If any individual layer tests greater than 1% of asbestos, the plaster covering as a whole would be regarded as ACM and subject to the requirements of NESHAP. Unfortunately, as several school systems have recently discovered, it is possible for individual plaster samples that test less than 1% asbestos under AHERA analytical procedures to test greater than 1% and be regulated under NESHAP. The bottom line: It would make good sense to retest all plaster coverings using the more sophisticated protocol specified by NESHAP (EPA/600-93/116) prior to beginning a renovation or demolition that will disturb these coverings.

Reader Survey

Please take a moment to complete our survey so that we may better serve you

Reader Response Form

Did you find this newsletter useful?

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I would like more information about:

- ☐ Indoor Air Quality
- ☐ Asbestos and AHERA
- ☐ Renovation and Construction Issues
- ☐ Other *(please list)*

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Do you have a specific question/topic you would like us to address?

_____

_____

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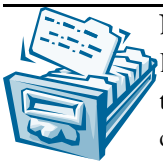

Division of Occupational Safety

For questions regarding indoor air quality or to request an indoor air quality investigation contact :

The Occupational Hygiene/Indoor Air Quality Program

Phone: 617-969-7177
Fax: 617-727-4581

For help with Asbestos, Lead or AHERA related matters or to request an asbestos or lead assessment, contact:

The Asbestos & Lead Program

Phone: 617-969-7177 (Eastern Mass)
413-781-2676 (Western Mass)

For problems or assistance with the Massachusetts Asbestos or Lead Abatement Regulations, contact our field offices:

Asbestos & Lead Licensing and Enforcement Program

Complaints: 1-800-425-0004

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Inside this issue:

Shift in Focus for "Safety & Health For the Commonwealth"

Environmental and occupational health issues surrounding asbestos, in particular, have been evolving at a rapid pace over the past several years. The availability of more sophisticated analytical methods has enabled the measurement of smaller fibers at lower concentrations. And certain events, such as the 2001 collapse of the World Trade Center towers and the investigations surrounding tremolite-contaminated vermiculite have also invited the question: what are the implications of these developments for the future of asbestos risk assessment and regulation? Because of the considerable importance of these emerging technical issues, DOS has decided to focus the content of "Safety and Health for the Commonwealth" on them for the immediate future. The current edition and future editions of this newsletter should therefore be of special interest to asbestos training providers, analytical services and consultants. Please feel free to provide us with your feed-back. If there are any asbestos, lead or other related issues that you would like to see addressed in future editions, please let us know.

Mission Statement

The mission of the Division of Occupational Safety (DOS) mission is to prevent occupational injuries and illnesses in Massachusetts. We work with employers, employees, unions and government officials to create safe and healthy work environments through site visits, analytical testing, and the dissemination of information.